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REMARKS

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Claims 1, 22, and 31 have been amended to more clearly define Applicant's invention. In particular, these claims recite that the non-ionic surfactant is insoluble in water and is a polyalkylene oxide. Claims 2, 9, and 15 have been cancelled in view of this amendment. Furthermore, claims 7-8 and 13-14 have been cancelled without prejudice to filing the subject matter of these claims in one or more subsequent applications or to reintroduction in the present application. No new matter has been added. Thus, claims 1, 3-6, 10-12, and 16-41 are pending.

Rejection of Claims under 35 U.S.C. § 112

The Examiner has rejected claims 7-8 and 13-14 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In paragraph 1 of the Office Action, the Examiner states that these claims recite "molecular weight" but there is no explanation in the specification whether this is weight-average or number-average.

Applicant believes the term "molecular weight" would be clear to one skilled in the art, particular in view of the disclosure found in the present specification (paragraph [0017] as well as the Examples), which recite specific non-ionic surfactants and polymers comprising at least one salt of a carboxylic acid group having the recited molecular weights. However, in order to advance prosecution of the present application, claims 7-8 and 13-14 have been cancelled without prejudice to filing the subject matter of these claims in one or more subsequent applications or to reintroduction in the present application, making the rejection of these claims moot.

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Rejection of Claims under 35 U.S.C. § 102

The Examiner has rejected claims 1-22 and 31-35 under 35 U.S.C. § 102(b) as being anticipated by Martin et al. (U.S. Patent Application Publication No. 2003/0191231).

In paragraph 2 of the Office Action, the Examiner states that Martin et al. discloses aqueous ambient crosslinkable and shelf stable polyester polymer compositions which provide coatings having improved open and wet edge times as well as good tack-free timers. Regarding specific features of the rejected claims, the Examiner states the following:

- a) regarding claims 1-4, Martin et al. discloses that the crosslinkable polyester oligomer(s) preferably contains a sufficient concentration of bound hydrophilic water-dispersing groups (such as non-ionic water-dispersing groups including polyalkylene oxide groups) that are capable of rendering the oligomer self water-dispersible, but the concentration of such groups is preferably not so great that the oligomer has an unacceptably high water solubility in order to not compromise the water sensitivity of the final coating;
- b) also regarding claims 1-4, Martin et al. discloses example of carboxylic acids (or their ester forming derivatives) that can be used in the synthesis of the polyester oligomer(s) for providing an acid component;
- c) regarding claims 5-6, Martin et al. discloses that suitable non-ionic hydrophilic water-dispersing groups include ethylene oxide-containing hydroxyl functional compounds;
- d) regarding claims 7-8, Martin et al. discloses that preferably the polyethylene oxide group has a Mw from 175 to 5000, more preferably 350 to 2200, and most preferably 660 to 220, which is within the claimed range;
- e) regarding claim 9, Martin et al. discloses that preferably at least 30%, more preferably at least 60%, most preferably at least 90%, and especially at least 94% by weight of the dispersed polymer(s) is present as insoluble polymer over the whole pH range;
- f) regarding claims 10-12, 15, and 33, Martin et al. discloses NeoCryl BT-24 (acrylic emulsion polymer), which is exemplified in the specification;

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g) regarding claims 13-14, Martin et al. discloses that the crosslinkable polyester oligomer(s) preferably has a weight average molecular weight (Mw) in the range of from 1000 to 100000, preferably 1000 to 80000, more preferably 1000 to 50000, and most preferably 1000 to 20000 Daltons, which is within the claimed range;

h) regarding claims 16-18, Martin et al. discloses that the crosslinkable polyester oligomer(s) may be completely water soluble (which is less preferred) or only have partial solubility in water and provides methods for dispersing the crosslinkable polyester oligomer(s);

i) regarding claims 19-20, Martin et al. discloses that the crosslinkable polyester oligomer(s) may crosslink at ambient temperature by a number of mechanisms, including Schiff base crosslinking, which is described as the reaction of a carbonyl function group(s) (an aldo or keto group, including enolic carbonyl groups) with a carbonyl-reactive amine and/or hydrazine functional group;

j) regarding claim 21, Martin et al. discloses that if the anionic water-dispersing groups are neutralized, the base used to neutralize the groups is preferably ammonia, an amine, or an organic base;

k) regarding claim 22, Martin et al. discloses that the aqueous coating composition may contain other conventional ingredients, including pigments, dyes, emulsifiers, surfactants, plasticizers, thickeners, and other additives;

l) regarding claim 31, Martin et al. discloses an aqueous coating composition additionally comprising a pigment;

m) regarding claim 32, Martin et al. discloses that the dispersed polymer(s) may for example be vinyl polymer, polyester, polyamide, polyepoxide, or a mixture thereof or may be a hybrid of two or more different polymer types such as urethane-acrylic, epoxy-acrylic- and polyester-acrylic polymers; and

n) regarding claims 34-35, Martin et al. discloses that preferably the solids content of the aqueous coating composition is in the range of from 20-60%, more preferably 20-65%, most preferably 20-70%, especially 20-75%, which is within the claimed range.

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Applicant respectfully disagrees. Regarding claims 1-21, claim 1 recites a dispersant composition comprising i) at least one non-ionic surfactant and ii) at least one polymer comprising at least one salt of a carboxylic acid group. The non-ionic surfactant is a polyalkylene oxide that is insoluble in water. This dispersant composition can be used to form the pigment compositions recited in present claims 22-30 and the aqueous coating compositions recited in present claims 31-41.

By comparison, Martin et al. does not disclose a dispersant composition comprising these two distinct components. Rather, Martin et al. describes a composition which includes a crosslinkable polyester oligomer. This single component "preferably contains a sufficient concentration of bound hydrophilic water-dispersing groups" (see paragraph [0062]) which can be "ionic water-dispersing groups or non-ionic water dispersing groups" (see paragraph [0063]). An example of a preferred non-ionic water-dispersing group is a polyalkylene oxide group (see paragraph [0063]), and an example of a preferred ionic water dispersing group is a carboxylic acid group (see paragraph [0064]). However, there is no disclosure anywhere in Martin et al. of the use of both a water-insoluble polyalkylene oxide surfactant and a polymer comprising at least one salt of a carboxylic acid group.

Furthermore, while Martin et al. describes that various additional components may be included in the described compositions, none of these can be considered to include the components recited in present claim 1. For example, Martin et al. states that the crosslinkable polyester oligomer may be completely water soluble (which is less preferred) or only have partial solubility in water (see paragraph [0061]), and this can be dispersed in water using techniques known in the art (see paragraph [0084]). While the polyester oligomer normally does not require the use of external surfactants when being dispersed, various surfactants may be added (see paragraph [0085]). However, there is no disclosure of either a polymer comprising at least one salt of a carboxylic acid group or of a water-insoluble polyalkylene oxide.

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Thus, contrary to the Examiner's statements summarized in a)-c) and h)-j) above, Martin et al. does not disclose the multi-component dispersant composition of present claim 1.

Regarding the Examiner's statements summarized in e) and f) above, Applicant notes that claim 1 recites a dispersant composition that can be used to prepare the disclosed pigment compositions and aqueous coating compositions. By comparison, the portions of Martin et al. cited by the Examiner refer to coating compositions described in this reference and not to a dispersant composition, as the term is used in the present invention. For example, Martin et al. states that they have invented an aqueous polymer coating composition having advantageous properties (see paragraph [0017]). This aqueous composition comprises the disclosed crosslinkable, water-dispersible polyester oligomer(s) (see paragraph [0018]) and preferably includes a dispersed polymer that is not the polyester oligomer (see paragraph [0088]). Thus, a polyester oligomer is combined with a dispersed polymer to further improve the provision of a binder system for providing an aqueous coating composition with the target advantageous properties (see paragraphs [0092]-[0094]). This composition can be used as the principle component in a coating formulation, which includes various cosolvents (see paragraph [0132]).

As noted by the Examiner, types of dispersed polymers of Martin et al. include acrylic emulsion polymers, such as those shown in the Examples of the present invention. However, these polymers are examples of water-based resins used in the disclosed aqueous coating compositions (see paragraphs [0038]-[0039] of the present specification). Thus, to one skilled in the art, Martin et al. does not disclose a dispersant composition that can be used to prepare a pigment composition or an aqueous coating composition, as in the present invention, but rather describes an aqueous coating composition comprising a water-based resin that can be further formulated with additional cosolvents.

Thus, while the aqueous coating composition of Martin et al. may include dispersed polymers having low water solubility, this is not the dispersant composition of the present invention. Furthermore, the dispersed polymer included in the composition of Martin et al. is clearly not a water-insoluble polyalkylene oxide, as recited in present claim 1.

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Applicant therefore believes that claim 1 is not anticipated by Martin et al. In addition, claims 3-6, 10-12, and 16-21, which depend directly or indirectly from claim 1, recites further embodiments of the present invention and, for at least the reasons discussed above, are also not anticipated by this reference. Finally, as discussed above, claims 7-9 and 13-15 have been cancelled, making the rejection of these claims moot.

Regarding claim 22, as amended, this claim recites a pigment composition comprising a pigment and the dispersant composition recited in claim 1. Since Martin et al. does not disclose the dispersant composition of claim 1, for the reasons discussed above, this reference also does not disclose the pigment composition of claim 22. Therefore, regarding the Examiner's comments summarized in k) above, while Martin et al. discloses that the aqueous coating composition may contain other conventional ingredients, including pigments, dyes, emulsifiers, surfactants, plasticizers, thickeners, and other additives, this is not the pigment composition of claim 22.

Applicant therefore believes that claim 22 is not anticipated by Martin et al.

Regarding claims 31-35, claim 31 recites an aqueous coating composition comprising a) an aqueous vehicle comprising a water-based resin and an aqueous solvent, b) at least one pigment, and c) the dispersant composition recited in claim 1. Since Martin et al. does not disclose the dispersant composition of claim 1, for the reasons discussed above, this reference also does not disclose the aqueous coating composition of claim 31. Therefore, regarding the Examiner's comments summarized in l)-n) above, while Martin et al. describes an aqueous coating composition having the identified components, this is not the aqueous coating composition of the present invention.

Applicant therefore believes that claim 31 is not anticipated by Martin et al. In addition, claims 32-35, which depend directly from claim 31, recite further embodiments of the present invention and, for at least the reasons discussed above, are also not anticipated by this reference.

Therefore, Applicant believes that claims 1-22 and 31-35 are not anticipated by Martin et al. and respectfully request that the rejection of these claims be withdrawn.

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Rejection of Claims under 35 U.S.C. § 103

The Examiner has rejected claims 23-30 and 36-41 under 35 U.S.C. § 103(a) as being unpatentable over Martin et al. (U.S. Patent Application Publication No. 2003/0191231) in view of Johnson et al. (U.S. Patent No. 5,837,045).

In paragraph 3 of the Office Action, the Examiner incorporates by reference the statements above regarding Martin et al., and further states that this reference does not disclose the limitations for the pigment and the pigment composition.

For this, the Examiner relies on Johnson et al., stating that this reference discloses a surface-modified colored pigment which includes a colored pigment having no primary amines and at least one attached hydrophilic organic group, wherein said organic group comprises a) at least one aromatic group, and b) at least one ionic group or ionizable group, or a mixture of an ionic group or an ionizable group. The Examiner also states that the surface-modified colored pigment is readily dispersed in a liquid vehicle, including water-based liquid vehicles and can be used in a variety of aqueous systems including coatings. The Examiner further states that the ionic group can be anionic and that the organic group can be a substituted or unsubstituted carboxyphenyl or sulfonaphthyl group, or salts thereof.

The Examiner therefore concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the surface-modified colored pigment, which includes at least one attached hydrophilic group as taught by Johnson et al., in the dispersant polymer composition of Martin et al. in order to obtain compositions, such as coating, paint, etc. compositions, which exhibit improved latency and improved waterfastness, and that can be tailored to provide compatibility with the particular aqueous system, thereby providing easier, more complete dispersion, improved colloidal stability, and greater color intensity and shades, as disclosed in Johnson et al., thereby arriving at the subject matter of claims 23-30 and 36-41.

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Applicant respectfully disagrees. Regarding claims 23-30, these claims depend directly or indirectly from claim 22. For the reasons discussed in more detail above, Applicant believes that claim 22 is patentable over Martin et al. since this reference does not disclose, teach, or suggest the recited dispersant composition and therefore also does not disclose, teach, or suggest a pigment composition comprising this dispersant composition.

Furthermore, Johnson et al. cannot overcome the deficiencies of Martin et al. Rather, Johnson et al. discloses a modified colored pigment comprising a pigment having attached at least one organic group, wherein the organic group comprises at least one ionic group, ionizable group, or mixture thereof. As noted by the Examiner, this modified pigment is readily dispersible in a liquid vehicle with the addition of a surfactant or other dispersing aid or additive. Thus, Applicant believes that, one skilled in the art would not combine the teachings of these references since there would be no motivation for using a dispersant or surfactant with the modified pigment of Johnson et al.

Even if these references were combined, the resulting combination would not be the pigment composition of claim 22. Thus, if one were to use the modified pigment of Johnson et al. in the aqueous coating composition of Martin et al., as suggested by the Examiner, the resulting combination would be a modified pigment in a liquid vehicle containing the components of Martin et al., which, as discussed in more detail above, are not those recited in present claim 22.

Applicant therefore believes that claim 22 is patentable over Martin et al. in view of Johnson et al. Since claims 22-30 depend directly or indirectly from this claim and recite further embodiments of the invention, these claims are therefore also patentable over this combination of references.

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Regarding claim 36-41, these claims depend directly or indirectly from claim 31. For the reasons discussed in more detail above, Applicant believes that claim 31 is patentable over Martin et al. since this reference does not disclose, teach, or suggest the recited dispersant composition and therefore also does not disclose, teach, or suggest an aqueous coating composition comprising this dispersant composition.

Furthermore, as discussed above, Johnson et al. cannot overcome the deficiencies of Martin et al. since there would be no motivation for using a dispersant or surfactant with the modified pigment of Johnson et al., based on the teaching of this reference, and, as a result, one skilled in the art would not be motivated to combine these references. In addition, even if these references were combined, the resulting combination would not be the aqueous coating composition of claim 31 since the resulting combination would be a modified pigment in an aqueous composition containing the components of Martin et al., which, as discussed in more detail above, are not those recited in present claim 31.

Applicant therefore believes that claim 31 is patentable over Martin et al. in view of Johnson et al. Since claims 36-41 depend directly or indirectly from this claim and recite further embodiments of the invention, these claims are therefore also patentable over this combination of references.

Therefore, Applicant believes that claims 22-30 and 36-41 are patentable over Martin et al. in view of Johnson et al. and respectfully request that the rejection of these claims be withdrawn.

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Conclusion

In view of the foregoing remarks, Applicant believes that this application is in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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